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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,557	01/27/2004	Glenn Joseph Leedy	ELM-1 Cont. 14	3092
1473	7590	06/05/2006	EXAMINER	
FISH & NEAVE IP GROUP			PERKINS, PAMELA E	
ROPES & GRAY LLP			ART UNIT	
1251 AVENUE OF THE AMERICAS FL C3			PAPER NUMBER	
NEW YORK, NY 10020-1105			2822	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

10/766,557

Applicant(s)

LEEDY, GLENN JOSEPH

Examin r

Pamela E. Perkins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 77-120 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 102 and 115 is/are allowed.
- 6) ☒ Claim(s) 77-101 and 103-120 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/17/06</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This office action is in response to the filing of the amendment on 7 March 2006.

Claims 77-120 are pending.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 77 and 84 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 77 and 84 have been amended to include the limitation "wherein the exposure cells have a thickness of less than about 50 microns, and wherein the exposure cells are capable of independent simultaneous operation." This limitation was not disclosed in the originally filed specification, claims or drawings.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 77-79, 81-83 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Rhee et al. (6,017,658).

Referring to claims 77 and 78, Rhee et al. disclose a method of maskless lithographic pattern generation (direct write lithography) using an array of exposure cells wherein at least one of the exposure cells exposed separate areas of a surface to be exposed, wherein the exposure cells have a thickness of less than about 50 microns, and wherein the exposure cells are capable of independent simultaneous operation (Fig. 2; col. 2, lines 1-11; col. 3, lines 45-52).

Referring to claim 79, moving through a sequence of horizontal and vertical motions at least one of the array of exposure cells and the surface to be exposed (col. 6, lines 22-47).

Referring to claims 81 and 82, selecting each exposure cell from the group consisting of a radiation source cell or a shuttered cell, wherein the shutter of a shuttered cell is used to vary operation of the exposure cell (col. 5, lines 61-67; col. 8, line 60 thru col. 9, line 6).

Referring to claim 83, radiation from a radiation source cell is X-ray (col. 5, lines 8-12)

Referring to claim 92, although Rhee et al. do not specifically state the array of exposure cells includes at least one million cells, it is intent that the array of exposure cells includes at least one million cells because Rhee et al. uses an electron beam to

generate the lithographic pattern. It is commonly known in the art that an electron comprises millions of cells.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al. in view of Eisenberger (4,028,547).

Rhee et al. disclose the subject matter claimed above except aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed.

Eisenberger discloses a method of lithographic pattern generation using an array of exposure cells wherein the exposure cells expose separate areas of a surface to be exposed (col. 2, lines 12-21). Eisenberger further discloses aligning by electro-magnetic coupling the array of exposure cells and the surface to be exposed (col. 2, lines 60-64 & col. 3, lines 64-66).

Since Rhee et al. and Eisenberger are both from the same field of endeavor, a method of lithographic pattern generation; the purpose disclosed by Eisenberger would have been recognized in the pertinent art of Rhee et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rhee et al. by aligning by electro-magnetic coupling the array of exposure cells and the

surface to be exposed as taught by Eisenberger to reduce device size without loss of beam intensity (col. 2, lines 12-21 & 60-64).

Claims 93, 98 and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al. in view of Greschner et al. (4,393,127).

Rhee et al. disclose the subject matter claimed above except providing a stress-controlled dielectric layer on the substrate.

Referring to claim 93, Greschner et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed; and providing at least one stress-controlled dielectric layer on the substrate (col. 5, lines 28-50).

Since Rhee et al. and Greschner et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Greschner et al. would have been recognized in the pertinent art of Rhee et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rhee et al. by providing a stress-controlled dielectric layer on the substrate as taught by Greschner et al. to increase device stability (col. 5, lines 45-50).

Referring to claim 104, Greschner et al. discloses the claimed invention except for forming the at least one stress-controlled layer at a temperature of about 400 °C. It would have been obvious to one having ordinary skill in the art at the time invention was made to form the at least one stress-controlled layer at a temperature of about 400 °C, since it has been held that where the general conditions of a claim are disclosed in the

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prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Claims 94 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al. in view of Greschner et al. as applied to claim 77 above, and further in view of Hori et al. (5,188,706).

Rhee et al. in view of Greschner et al. disclose the subject matter claimed above except the stress of the stress-controlled dielectric layer is less than about  $8 \times 10^8$  dynes/cm<sup>2</sup>.

Hori et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed; and providing at least one stress-controlled dielectric layer on the substrate (col. 1, lines 9-13; col. 4, lines 5-59).

Referring to claim 94, Hori et al. disclose the stress of the stress-controlled dielectric layer is less than about  $8 \times 10^8$  dynes/cm<sup>2</sup>.

Since Rhee et al. and Hori et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Hori et al. would have been recognized in the pertinent art of Rhee et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rhee et al. by the stress of the stress-controlled dielectric layer is less than about  $8 \times 10^8$  dynes/cm<sup>2</sup> as taught by Hori et al. to increase density and stress stability (col. 4, lines 5-8).

Referring to claim 95, Greschner et al. disclose the stress as tensile (col. 5, lines 39-50).

Claims 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al. in view of Greschner et al. as applied to claim 77 above, and further in view of Celler et al. (5,051,326).

Rhee et al. in view of Greschner et al. disclose the subject matter claimed above except the stress of the at least one stress-controlled dielectric layer is 2 to 100 times less than the fracture strength of the at least one stress-controlled dielectric layer.

Celler et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed (col. 1, lines 10-18); and providing at least one stress-controlled dielectric layer on the substrate (col. 2, lines 7-31).

Referring to claim 96, Celler et al. disclose the stress of the at least one stress-controlled dielectric layer is 2 less than the fracture strength of the at least one stress-controlled dielectric layer (col. 3, lines 48-54; col. 4, lines 60-66).

Since Rhee et al. and Celler et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Celler et al. would have been recognized in the pertinent art of Rhee et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rhee et al. by the stress of the at least one stress-controlled dielectric layer is 2 less



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than the fracture strength of the at least one stress-controlled dielectric layer as taught by Celler to prevent deformation (col. 2, lines 7-10).

Referring to claim 97, Greschner et al. disclose the stress as tensile (col. 5, lines 39-50).

Claims 99-101, 103 and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al. in view of Greschner et al. as applied to claim 77 above, and further in view of Murooka et al. (5,166,962).

Rhee et al. in view of Greschner et al. disclose the subject matter claimed above except the at least one stress-controlled dielectric layer is elastic and the at least one stress-controlled dielectric layer is formed by multiple RF energy sources.

Murooka et al. disclose a method of lithographic pattern generation where an array of exposure cells is provided on a substrate, wherein the exposure cells expose separate areas of a surface to be exposed (col. 2, lines 25-39); and providing at least one stress-controlled dielectric layer on the substrate (col. 1, lines 27-46).

Referring to claim 99, Murooka et al. disclose the at least one stress-controlled dielectric layer as elastic (col. 7, line 64 thru col. 8, line 15).

Referring to claim 100, although Murooka et al. does not specifically state the at least one stress-controlled dielectric layer is substantially flexible, by definition elastic means flexible.

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Referring to claim 101, Murooka et al. disclose the at least one stress-controlled dielectric layer is capable of forming at least one of a flexible membrane and a free standing membrane (co. 3, line 64 thru col. 4, line 6).

Referring to claim 103, Murooka et al. disclose the at least one stress-controlled dielectric layer is formed by multiple RF energy sources (col. 4, lines 29-40).

Referring to claim 105, Murooka et al. disclose providing at least one thinned flexible substrate that has integrated circuits formed thereon (col. 1, lines 13-26).

Since Rhee et al. and Murooka et al. are both from the same field of endeavor, a method of lithographic pattern generation, the purpose disclosed by Murooka et al. would have been recognized in the pertinent art of Rhee et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rhee et al. by the at least one stress-controlled dielectric layer is elastic and the at least one stress-controlled dielectric layer is formed by multiple RF energy sources as taught by Murooka et al. to improve transmittance (col. 2, lines 22-29).

### ***Allowable Subject Matter***

Claims 84-91, 102, 106-120 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: referring to claim 84, prior art does not disclose, teach or suggest providing a low stress and elastic dielectric layer on the substrate.

The following is a statement of reasons for the indication of allowable subject matter: referring to claims 102 and 115, prior art does not disclose, teach or suggest

providing a plurality of interconnect conductors formed within the at least one stress-controlled dielectric layer.

### ***Response to Arguments***

Applicant's arguments with respect to claims 77-120 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela E. Perkins whose telephone number is (571)

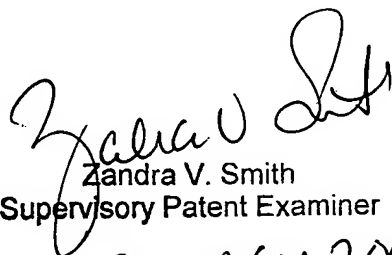
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272-1840. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PEP  
30 May 2006

  
Zandra V. Smith  
Supervisory Patent Examiner  
30 May 2006